

REMARKS

Claims 1-56 are pending. Claims 1-25 and 43-45 are withdrawn.

Claims 26-42 and 46-56 are presently rejected.

Amendments to the Claims

Claims 26-28, 30, 33-42, 46, 47, 49-53, and 55 have been amended and claims 48 and 54 have been canceled.

Claim 26 has been amended to combine the steps of claims 26 and 27. Support is found in at least claims 27 and paragraphs [0090]-[0094].

Claim 27 has been amended to recite a cooling step. Support is found in at least paragraph [0093].

Claims 28, 30, 35-42, and 49-51 have been amended to depend from claim 26. Claims 37, 40-42, and 49-50 have been amended for consistency with claim 26 in referring to the steps thereof, the gel beads, or the density-control agent.

Claim 33 has been amended to change “particles” to “beads” for consistency with the claims it depends from.

Claims 34 and 40-42 have been amended to recite the percentages as percent by weight based on the weight of the gel beads. Support is found in at least paragraph [0050].

Claim 46 has been amended to recite that the hollow particles comprise a gas within a spherical shell, wherein the gas remains within the spherical shell unless said shell is ruptured. Support is found in at least paragraphs [0069] and [0075].

Claim 47 has been amended to depend from claim 46.

Claim 52 has been amended to depend from claim 53.

Claim 53 has been amended to remove an extra “and,” and to recite the step of adding a density reducer that comprises entrapped gas within a material that retains the gas unless the material is ruptured and that the density reducer is encapsulated in the beads during formation. Support is found in at least paragraphs [0075] and [0095].

Claim 55 has been amended to remove “substantially impermeable” from the phrase “temperature-sensitive substantially impermeable expandable thermoplastic density-control agent” and to recite the step of adding a density reducer to the resultant mixture. The density

reducer comprises an entrapped gas within a temperature-sensitive expandable thermoplastic microsphere. Support is found in at least paragraphs [0069], [0075], and [0095].

No new matter has been added by the above claim amendments.

Claim Objections

Claims 53-56 are objected to as having an incorrect claim status. Applicants have correctly listed the claim status of claims 53-56 in the present listing of the claims. Thus, the objections should be withdrawn.

Claims 51 and 52 are objected to as identical and depending from the same base claim. Claim 52 has been amended to depend from claim 53. Thus, the objection should be withdrawn.

Claim Rejections – 35 U.S.C. § 112

§ 112, first paragraph

Claims 26, 35, 46, and 47 are rejected under 25 U.S.C. § 112, first paragraph as failing to comply with the written description. Applicant submits that the Examiner meant claim 48 instead of claim 47 because the language “a single gas bubble” referred to on page 3 of the Office Action actually appears in claim 48.

Claim 26 has been amended to remove the language referred to on page 3 of the Office Action as lacking support. Applicants do not agree with this rejection. However, to advance prosecution, Applicants have removed the referenced language. Accordingly, the rejection should be withdrawn.

Claim 35 is rejected as lacking support for the discharge temperature of 45°C. Applicants disagree. The specification supports the claimed discharge temperature. In paragraph [0093], once phase I and Phase II are mixed to form a third mixture, the third mixture is cooled to 45°C before being discharged into the hydrophobic liquid discussed in paragraph [0094]. Additionally, examples 1 supports claim 35. Mixture (III) in example 1 is cooled down to 45°C before being discharged into a cold paraffin oil bath. Furthermore, claim 26, from which claim 35 ultimately depends, has been amended to recite the cooling of the third mixture to a discharge temperature below the elevated temperature but above the gelling point of the first mixture and that the third mixture is discharged through a needle to form droplets or globules while at the discharge temperature. For at least these reasons, Applicants respectfully submit that claim 35 is supported by the written description and that the rejection should be withdrawn.

Claim 46 has been amended to remove the language referred to on page 3 of the Office Action as lacking support. Applicants do not agree with this rejection, but to advance prosecution have removed the referenced language. Accordingly, the rejection should be withdrawn.

Claim 48 (which was incorrectly rejected as claim 47) has been canceled. Accordingly, the rejection should be withdrawn.

§ 112, second paragraph

Claims 26-42, 46-52, and 54-56 are rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 26 has been amended to remove “other bead ingredients,” which the Office believed rendered the claim indefinite. Accordingly, the rejection should be withdrawn.

Claim 27 has been amended and the cited language “a density control agent carrier” has been canceled. Accordingly, the rejection should be withdrawn.

Claim 35 ultimately depends from claim 26. Claim 26 recites “a discharge temperature,” thus claim 35 is merely referring back to said discharge temperature. Accordingly, the rejection should be withdrawn.

Claim 47 now depends from claim 46 where “a plurality of hollow particles” is recited, which provides the antecedent basis for “the plurality of hollow particles” recited in claim 47.

Claim 54 has been canceled. Claim 55 has been amended to remove the phrase “at least some of said particles incorporating chambers containing gas.” Accordingly, Applicants submit that claim 55 is definite and that the rejection should be withdrawn.

Claims 34 and 40-42 have been amended to recite “gel beads” rather than “gel particles” for consistency with claim 26 and the percentages have been amended to recite percentages by weight based on the weight of the gel bead. Accordingly, the rejections should be withdrawn.

Claim rejections – 35 U.S.C. § 102

Claims 26-33, 35-39 and 46-56 are rejected under 35 U.S.C. § 102(b) as being anticipated by Delrieu et al. (US 6,319,507) as evidenced by Robinson et al. (US 6,852,266). Robinson is only cited in the Office Action for its use of the term “porous.”

Claim 26

Claim 26, as amended, recites an effective quantity of a density-control agent that reduces the density of the resulting beads and the steps of dispersing the density-control agent in water or oil at room temperature to form a second mixture and adding the second mixture to the first mixture (the aqueous solution of gelling agent) to form a third mixture.

The Office Action on pages 5-8 cites to Delrieu and identifies its teaching of silica spheres or porous microspherical inert polymers such as polyethylene or polypropylene particles as the claimed density-control agent. Applicants disagree. The density-control agent, as claimed, reduces the density of the resulting beads. The silica spheres or porous microspherical inert polymers having solvents adsorbed into their pours, as taught in Delrieu at col. 19, ll. 51-65 and col. 20, ll. 2-16, would increase the density of a resulting bead as a result of the extra mass of the solvent loaded within its volume.

Furthermore, Delrieu does not teach dispersing these solvent filled spheres disperse in water or oil as its own mixture before mixing with an aqueous solution of the gelling agent. Instead, Delrieu teaches “dispersing the solvent laden particles in a gelling medium” directly.

For at least these reasons, Applicants respectfully submit that Delrieu as evidenced by Robinson does not anticipate amended claim 26. Therefore, the rejection of claim 26 should be withdrawn.

Claims 53 and 55

Claims 53 and 55 recite a density reducer that comprises entrapped gas. Claim 53 has the gas entrapped in a material that retains the gas unless the material is ruptured. Claim 55 has the gas entrapped in a temperature-sensitive expandable thermoplastic microsphere that retains the gas unless ruptured.

The Office Action on pages 7-8 cites to the teachings of the solvent filled porous silica spheres of Delrieu as the claimed density reducer. Applicants disagree. As discussed above, the fact that the porous silica spheres in Delrieu are loaded by adsorption with solvent will result in the silica spheres increasing the density of the resulting bead rather than reducing it. Furthermore, Delrieu does not teach that there is any air trapped within the porous silica spheres. Instead, the reference teaches that the porous silica is loaded with solvent and is “solvent-laden.” Furthermore, Delrieu does not teach that the pours of the silica sphere are closed such that a gas would be trapped therein with no means of escape except rupture of the silica sphere.

Furthermore, the Office has unreasonably defined “hollow” to be equivalent with “porous.” A plastic Easter egg is hollow, but not porous. Pumas stone is porous, but not necessarily hollow. A balloon may be both porous and hollow. These words are not equivalent as the Office has contended. During examination, the claims must be interpreted as broadly as their terms reasonably allow, given the broadest reasonable interpretation in light of the specification. MPEP 2111.01 (citing *In re American Academy of Science Tech Center*, 367 F.3d 1359, 1369, 70 USPQ2d 1827, 1834 (Fed. Cir. 2004)) (emphasis added). This means that the words of the claim must be given their plain meaning unless the plain meaning is inconsistent with the specification. Id. (citing *Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004)).

The Office contends that porous as used in Delrieu in view of Robinson is equivalent to hollow as used in Applicants claims and specification. Applicants disagree. The present specification describes particles having entrapped gas as being “hollow” and as retaining the entrapped gas therein unless ruptured. The Princeton online dictionary defines “hollow” as “a cavity or space in something,” “having a space or gap or cavity,” for example, “a hollow tree.” The Princeton online dictionary defines “porous” as “able to absorb fluids;” “full of pores or vessels or holes;” “holey – allowing passage in and out.” (<http://wordnetweb.princeton.edu>). The definitions of “porous” are consistent with the Delrieu description of the porous silica spheres as adsorbent. Therefore, the Office’s definition of “porous,” as being the same as “hollow” is in error. The Office’s definition would render the term “hollow” as used in Applicants’ specification superfluous. That is inappropriate because “porous” and “hollow” read in context within their respective specifications have different meanings, just like they have different definitions in the dictionary. Therefore, the Office has given the term “hollow” an unreasonable interpretation in light of the specification.

For at least these reasons, Applicants respectfully submits that Delrieu does not teach all the limitations of claims 53 and 55; thus, these claims are not anticipated. Therefore, Applicants respectfully request that the § 102(b) rejections of claims 53 and 55 be withdrawn.

Respectfully submitted,

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